



SEQUENCE LISTING

<110> CHUGAI SEIYAKU KABUSHIKI KAISHA

<120> Therapeutic agent for diseases caused by PTH or PTHrP

<130> 04853.0086

<140> US 10/019,571

<141> 2001-12-31

<150> PCT/JP00/04414

<151> 2000-07-03

<150> JP 11-189793

<151> 1999-07-02

<160> 76

<170> PatentIn version 3.1

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Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
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Arg Phe Ser Gly Ser Ser Ser Gly Ala Asp Arg Tyr Leu Ser Ile Ser  
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Asn Ile Gln Pro Glu Asp Glu Ala Met Tyr Ile Cys Gly Val Gly Asp  
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Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Phe Tyr Cys  
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Lys Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
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Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu Thr Ile Ser  
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Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Val Gly Asp  
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Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
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Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
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Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu Thr Ile Ser  
 65 70 75 80

Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Val Gly Asp  
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Thr Val Leu Gly Gln Pro  
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35 40 45

Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
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Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu Thr Ile Ser  
65 70 75 80

Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Val Gly Asp  
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Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly Thr Lys Leu  
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Thr Val Leu Gly Gln Pro  
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Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
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 35 40 45

Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
 50 55 60

Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu Thr Ile Ser  
 65 70 75 80

Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Ile Cys Gly Val Gly Asp  
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35 40 45

Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly Ile Pro Asp  
50 55 60

Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu Thr Ile Ser  
65 70 75 80

Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Ile Cys Gly Val Gly Asp  
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35 40 45

Ala Thr Ile Ser Ser Gly Gly Ser Tyr Thr Tyr Tyr Pro Asp Ser Val  
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Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr

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70

75

80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
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agt	agc	tat	ggc	atg	tct	tgg	gtc	cgc	cag	gct	cca	ggc	aag	ggg	ctg	192	
Ser	Ser	Tyr	Gly	Met	Ser	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu		
30					35				40						45		
gag	tgg	gtg	gca	acc	att	agt	agt	ggc	ggc	agt	tac	acc	tac	tat	cca	240	
Glu	Trp	Val	Ala	Thr	Ile	Ser	Ser	Gly	Gly	Ser	Tyr	Thr	Tyr	Tyr	Pro		
				50				55						60			

gac agt gtg aag ggg cga ttc acc atc tcc aga gac aat tcc aag aac	288
Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn	
65 70 75	

acg ctg tat ctg caa atg aac agc ctg aga gct gag gac acg gct gtg	336
Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val	
80 85 90	

tat tac tgt gcg aga cag act act atg act tac ttt gct tac tgg ggc	384
Tyr Tyr Cys Ala Arg Gln Thr Thr Met Thr Tyr Phe Ala Tyr Trp Gly	
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cag gga acc ctg gtc acc gtc tcc tca	411
Gln Gly Thr Leu Val Thr Val Ser Ser	
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Pro Tyr Trp Met Gln  
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Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr  
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Leu	Gly	Ala	Ser	Ala	Lys	Leu	Thr	Cys	Thr	Leu	Ser	Ser	Gln	His	Ser		
	15					20				25							
acg	tac	acc	att	gaa	tgg	tat	cag	caa	cag	cca	ctc	aag	cct	cct	aag		192
Thr	Tyr	Thr	Ile	Glu	Trp	Tyr	Gln	Gln	Gln	Pro	Leu	Lys	Pro	Pro	Lys		
30				35					40						45		
tat	gtg	atg	gat	ctt	aag	caa	gat	gga	agc	cac	agc	aca	ggt	gat	ggg		240
Tyr	Val	Met	Asp	Leu	Lys	Gln	Asp	Gly	Ser	His	Ser	Thr	Gly	Asp	Gly		
				50				55					60				
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Ile	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Ser	Ser	Gly	Ala	Asp	Arg	Tyr	Leu		
			65				70					75					
agc	att	tcc	aac	atc	cag	cca	gaa	gat	gaa	gca	atg	tac	atc	tgt	ggt		336
Ser	Ile	Ser	Asn	Ile	Gln	Pro	Glu	Asp	Glu	Ala	Met	Tyr	Ile	Cys	Gly		
	80					85					90						
gtg	ggt	gat	aca	att	aag	gaa	caa	ttt	gtg	tat	gtt	ttc	ggc	ggt	ggg		384
Val	Gly	Asp	Thr	Ile	Lys	Glu	Gln	Phe	Val	Tyr	Val	Phe	Gly	Gly	Gly		
	95				100				105								
acc	aag	gtc	act	gtc	cta	ggt	cag	ccc									411
Thr	Lys	Val	Thr	Val	Leu	Gly	Gln	Pro									
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Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser	
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ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt	144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser	
15 20 25	
acg tac acc att gaa tgg cat cag cag cag cca gag aag ggc cct cgg	192
Thr Tyr Thr Ile Glu Trp His Gln Gln Gln Pro Glu Lys Gly Pro Arg	
30 35 40 45	
tac ttg atg aaa ctt aag caa gat gga agc cac agc aca ggt gat ggg	240
Tyr Leu Met Lys Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly	
50 55 60	
att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc	288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu	
65 70 75	
acc atc tcc agc ctc cag tct gag gat gag gct gac tat tac tgt ggt	336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly	
80 85 90	
gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg	384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly	
95 100 105	
acc aaa ctg acc gtc cta ggt cag ccc	411
Thr Lys Leu Thr Val Leu Gly Gln Pro	
110 115	

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Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser	
-1 1 5 10	
ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt	144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser	
15 20 25	
acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct aag	192
Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Lys	
30 35 40 45	
tac ctg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg	240
Tyr Leu Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly	
50 55 60	
att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc	288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu	
65 70 75	
acc atc tcc agc ctc cag tct gag gat gag gct gac tat tac tgt ggt	336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly	
80 85 90	
gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg	384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly	
95 100 105	
acc aaa ctg acc gtc cta ggc cag ccc	411
Thr Lys Leu Thr Val Leu Gly Gln Pro	
110 115	
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Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser						
	-1 1		5		10	
ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt						144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser						
	15		20		25	
acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct aag						192
Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Lys						
	30		35		40	45
tac gtg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg						240
Tyr Val Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly						
		50		55		60
att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc						288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu						
		65		70		75
acc atc tcc agc ctc cag tct gag gat gag gct gac tat tac tgt ggt						336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly						
	80		85		90	
gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg						384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly						
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acc aaa ctg acc gtc cta ggc cag ccc						411
Thr Lys Leu Thr Val Leu Gly Gln Pro						
	110		115			
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Ser	Phe	Ser	Gln	Leu	Val	Leu	Thr	Gln	Ser	Pro	Ser	Ala	Ser	Ala	Ser		
	-1	1					5					10					
ctg	gga	gcc	tcg	gtc	aag	ctc	acc	tgc	acc	ttg	agt	agt	cag	cac	agt		144
Leu	Gly	Ala	Ser	Val	Lys	Leu	Thr	Cys	Thr	Leu	Ser	Ser	Gln	His	Ser		
	15					20					25						
acg	tac	acc	att	gaa	tgg	tat	cag	cag	cag	cca	gag	aag	ggc	cct	agg		192
Thr	Tyr	Thr	Ile	Glu	Trp	Tyr	Gln	Gln	Gln	Pro	Glu	Lys	Gly	Pro	Arg		
	30				35					40					45		
tac	ctg	atg	gat	ctt	aag	caa	gat	gga	agc	cac	agc	aca	ggt	gat	ggg		240
Tyr	Leu	Met	Asp	Leu	Lys	Gln	Asp	Gly	Ser	His	Ser	Thr	Gly	Asp	Gly		
				50					55					60			
att	cct	gat	cgc	ttc	tca	ggc	tcc	agc	tct	ggg	gct	gag	cgc	tac	ctc		288
Ile	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Ser	Ser	Gly	Ala	Glu	Arg	Tyr	Leu		
			65					70					75				
acc	atc	tcc	agc	ctc	cag	tct	gag	gat	gag	gct	gac	tat	tac	tgt	ggg		336
Thr	Ile	Ser	Ser	Leu	Gln	Ser	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gly		
		80					85					90					
gtg	ggt	gat	aca	att	aag	gaa	caa	ttt	gtg	tac	gtg	ttc	ggc	gga	ggg		384
Val	Gly	Asp	Thr	Ile	Lys	Glu	Gln	Phe	Val	Tyr	Val	Phe	Gly	Gly	Gly		
	95					100					105						
acc	aaa	ctg	acc	gtc	cta	ggc	cag	ccc									411
Thr	Lys	Leu	Thr	Val	Leu	Gly	Gln	Pro									
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tct ttc tcc cag ctt gtg ctg act caa tcg ccc tct gcc tct gcc tcc	96
Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser	
-1 1 5 10	
ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt	144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser	
15 20 25	
acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct agg	192
Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Arg	
30 35 40 45	
tac gtg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg	240
Tyr Val Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly	
50 55 60	
att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc	288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu	
65 70 75	
acc atc tcc agc ctc cag tct gag gat gag gct gac tat tac tgt ggt	336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gly	
80 85 90	
gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg	384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly	
95 100 105	
acc aaa ctg acc gtc cta ggc cag ccc	411
Thr Lys Leu Thr Val Leu Gly Gln Pro	
110 115	

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tct ttc tcc cag ctt gtg ctg act caa tgc ccc tct gcc tct gcc tcc 96  
 Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser  
               -1  1                                  5                                  10

ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt 144  
 Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser  
       15                                  20                                  25

acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct aag 192  
 Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Lys  
 30                                  35                                  40                                  45

tac ctg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg 240  
 Tyr Leu Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly  
                                   50                                  55                                  60

att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc 288  
 Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu  
                                   65                                  70                                  75

acc atc tcc agc ctc cag tct gag gat gag gct gac tat atc tgt ggt 336  
 Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Ile Cys Gly  
               80                                  85                                  90

gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg 384  
 Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly  
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acc aaa ctg acc gtc cta ggc cag ccc 411  
 Thr Lys Leu Thr Val Leu Gly Gln Pro  
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tct ttc tcc cag ctt gtg ctg act caa tcg ccc tct gcc tct gcc tcc      96
Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser
               -1  1                      5                      10

ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt      144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser
               15                      20                      25

acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct agg      192
Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Arg
               30                      35                      40                      45

tac ctg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg      240
Tyr Leu Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly
               50                      55                      60

att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc      288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu
               65                      70                      75

acc atc tcc agc ctc cag tct gag gat gag gct gac tat atc tgt ggt      336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Ile Cys Gly
               80                      85                      90

gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg      384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly
               95                      100                      105

acc aaa ctg acc gtc cta ggc cag ccc      411
Thr Lys Leu Thr Val Leu Gly Gln Pro
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tct ttc tcc cag ctt gtg ctg act caa tcg ccc tct gcc tct gcc tcc	96
Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser	
-1 1 5 10	

ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt	144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser	
15 20 25	

acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct aag	192
Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Lys	
30 35 40 45	

tac gtg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg	240
Tyr Val Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly	
50 55 60	

att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc	288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu	
65 70 75	

acc atc tcc agc ctc cag tct gag gat gag gct gac tat atc tgt ggt	336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Ile Cys Gly	
80 85 90	

gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg	384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly	
95 100 105	

acc aaa ctg acc gtc cta ggc cag ccc	411
Thr Lys Leu Thr Val Leu Gly Gln Pro	
110 115	

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<222> (58) .. (411)

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tct ttc tcc cag ctt gtg ctg act caa tcg ccc tct gcc tct gcc tcc	96
Ser Phe Ser Gln Leu Val Leu Thr Gln Ser Pro Ser Ala Ser Ala Ser	
-1 1 5 10	

ctg gga gcc tcg gtc aag ctc acc tgc acc ttg agt agt cag cac agt	144
Leu Gly Ala Ser Val Lys Leu Thr Cys Thr Leu Ser Ser Gln His Ser	
15 20 25	

acg tac acc att gaa tgg tat cag cag cag cca gag aag ggc cct agg	192
Thr Tyr Thr Ile Glu Trp Tyr Gln Gln Gln Pro Glu Lys Gly Pro Arg	
30 35 40 45	

tac gtg atg gat ctt aag caa gat gga agc cac agc aca ggt gat ggg	240
Tyr Val Met Asp Leu Lys Gln Asp Gly Ser His Ser Thr Gly Asp Gly	
50 55 60	

att cct gat cgc ttc tca ggc tcc agc tct ggg gct gag cgc tac ctc	288
Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser Gly Ala Glu Arg Tyr Leu	
65 70 75	

acc atc tcc agc ctc cag tct gag gat gag gct gac tat atc tgt ggt	336
Thr Ile Ser Ser Leu Gln Ser Glu Asp Glu Ala Asp Tyr Ile Cys Gly	
80 85 90	

gtg ggt gat aca att aag gaa caa ttt gtg tac gtg ttc ggc gga ggg	384
Val Gly Asp Thr Ile Lys Glu Gln Phe Val Tyr Val Phe Gly Gly Gly	
95 100 105	

acc aaa ctg acc gtc cta ggc cag ccc	411
Thr Lys Leu Thr Val Leu Gly Gln Pro	
110 115	

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Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly Lys Ser Ile Gln	
1 5 10 15	

Asp	Leu	Arg	Arg	Arg	Phe	Phe	Leu	His	His	Leu	Ile	Ala	Glu	Ile	His
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Thr Ala

<210> 76  
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Met Gly Thr Ala Arg Ile Ala Pro	
1 5	
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Gly Leu Ala Leu Leu Leu Cys Cys Pro Val Leu Ser Ser Ala Tyr Ala	
10 15 20	
ctg gtg gat gca gat gac gtc atg act aaa gag gaa cag atc ttc ctg	148
Leu Val Asp Ala Asp Asp Val Met Thr Lys Glu Glu Gln Ile Phe Leu	
25 30 35 40	
ctg cac cgt gct cag gcc cag tgc gaa aaa cgg ctc aag gag gtc ctg	196
Leu His Arg Ala Gln Ala Gln Cys Glu Lys Arg Leu Lys Glu Val Leu	
45 50 55	
cag agg cca gcc agc ata atg gaa tca gac aag gga tgg aca tct gcg	244
Gln Arg Pro Ala Ser Ile Met Glu Ser Asp Lys Gly Trp Thr Ser Ala	
60 65 70	
tcc aca tca ggg aag ccc agg aaa gat aag gca tct ggg aag ctc tac	292
Ser Thr Ser Gly Lys Pro Arg Lys Asp Lys Ala Ser Gly Lys Leu Tyr	
75 80 85	
cct gag tct gag gag gac aag gag gca ccc act ggc agc agg tac cga	340
Pro Glu Ser Glu Glu Asp Lys Glu Ala Pro Thr Gly Ser Arg Tyr Arg	
90 95 100	
ggg cgc ccc tgt ctg ccg gaa tgg gac cac atc ctg tgc tgg ccg ctg	388
Gly Arg Pro Cys Leu Pro Glu Trp Asp His Ile Leu Cys Trp Pro Leu	
105 110 115 120	
ggg gca cca ggt gag gtg gtg gct gtg ccc tgt ccg gac tac att tat	436

Gly	Ala	Pro	Gly	Glu	Val	Val	Ala	Val	Pro	Cys	Pro	Asp	Tyr	Ile	Tyr	
				125					130					135		
gac	ttc	aat	cac	aaa	ggc	cat	gcc	tac	cga	cgc	tgt	gac	cgc	aat	ggc	484
Asp	Phe	Asn	His	Lys	Gly	His	Ala	Tyr	Arg	Arg	Cys	Asp	Arg	Asn	Gly	
			140					145					150			
agc	tgg	gag	ctg	gtg	cct	ggg	cac	aac	agg	acg	tgg	gcc	aac	tac	agc	532
Ser	Trp	Glu	Leu	Val	Pro	Gly	His	Asn	Arg	Thr	Trp	Ala	Asn	Tyr	Ser	
		155					160					165				
gag	tgt	gtc	aaa	ttt	ctc	acc	aat	gag	act	cgt	gaa	cgg	gag	gtg	ttt	580
Glu	Cys	Val	Lys	Phe	Leu	Thr	Asn	Glu	Thr	Arg	Glu	Arg	Glu	Val	Phe	
	170					175					180					
gac	cgc	ctg	ggc	atg	att	tac	acc	gtg	ggc	tac	tcc	gtg	tcc	ctg	gcg	628
Asp	Arg	Leu	Gly	Met	Ile	Tyr	Thr	Val	Gly	Tyr	Ser	Val	Ser	Leu	Ala	
185					190					195					200	
tcc	ctc	acc	gta	gct	gtg	ctc	atc	ctg	gcc	tac	ttt	agg	cgg	ctg	cac	676
Ser	Leu	Thr	Val	Ala	Val	Leu	Ile	Leu	Ala	Tyr	Phe	Arg	Arg	Leu	His	
			205						210					215		
tgc	acg	cgc	aac	tac	atc	cac	atg	cac	ctg	ttc	ctg	tcc	ttc	atg	ctg	724
Cys	Thr	Arg	Asn	Tyr	Ile	His	Met	His	Leu	Phe	Leu	Ser	Phe	Met	Leu	
			220					225					230			
cgc	gcc	gtg	agc	atc	ttc	gtc	aag	gac	gct	gtg	ctc	tac	tct	ggc	gcc	772
Arg	Ala	Val	Ser	Ile	Phe	Val	Lys	Asp	Ala	Val	Leu	Tyr	Ser	Gly	Ala	
		235					240					245				
acg	ctt	gat	gag	gct	gag	cgc	ctc	acc	gag	gag	gag	ctg	cgc	gcc	atc	820
Thr	Leu	Asp	Glu	Ala	Glu	Arg	Leu	Thr	Glu	Glu	Glu	Leu	Arg	Ala	Ile	
	250					255					260					
gcc	cag	gcg	ccc	ccg	ccg	cct	gcc	acc	gcc	gct	gcc	ggc	tac	gcg	ggc	868
Ala	Gln	Ala	Pro	Pro	Pro	Pro	Ala	Thr	Ala	Ala	Ala	Gly	Tyr	Ala	Gly	
265					270				275						280	
tgc	agg	gtg	gct	gtg	acc	ttc	ttc	ctt	tac	ttc	ctg	gcc	acc	aac	tac	916
Cys	Arg	Val	Ala	Val	Thr	Phe	Phe	Leu	Tyr	Phe	Leu	Ala	Thr	Asn	Tyr	
			285					290						295		
tac	tgg	att	ctg	gtg	gag	ggg	ctg	tac	ctg	cac	agc	ctc	atc	ttc	atg	964
Tyr	Trp	Ile	Leu	Val	Glu	Gly	Leu	Tyr	Leu	His	Ser	Leu	Ile	Phe	Met	
			300				305						310			
gcc	ttc	ttc	tca	gag	aag	aag	tac	ctg	tgg	ggc	ttc	aca	gtc	ttc	ggc	1012
Ala	Phe	Phe	Ser	Glu	Lys	Lys	Tyr	Leu	Trp	Gly	Phe	Thr	Val	Phe	Gly	
		315					320					325				
tgg	ggg	ctg	ccc	gct	gtc	ttc	gtg	gct	gtg	tgg	gtc	agt	gtc	aga	gct	1060

Trp	Gly	Leu	Pro	Ala	Val	Phe	Val	Ala	Val	Trp	Val	Ser	Val	Arg	Ala		
330						335				340							
acc	ctg	gcc	aac	acc	ggg	tgc	tgg	gac	ttg	agc	tcc	ggg	aac	aaa	aag	1108	
Thr	Leu	Ala	Asn	Thr	Gly	Cys	Trp	Asp	Leu	Ser	Ser	Gly	Asn	Lys	Lys		
345					350					355					360		
tgg	atc	atc	cag	gtg	ccc	atc	ctg	gcc	tcc	att	gtg	ctc	aac	ttc	atc	1156	
Trp	Ile	Ile	Gln	Val	Pro	Ile	Leu	Ala	Ser	Ile	Val	Leu	Asn	Phe	Ile		
				365					370					375			
ctc	ttc	atc	aat	atc	gtc	cgg	gtg	ctc	gcc	acc	aag	cag	cgg	gag	acc	1204	
Leu	Phe	Ile	Asn	Ile	Val	Arg	Val	Leu	Ala	Thr	Lys	Gln	Arg	Glu	Thr		
			380						385				390				
aac	gcc	ggc	cgg	tgt	gac	aca	cgg	cag	cag	tac	cgg	aag	ctg	ctc	aaa	1252	
Asn	Ala	Gly	Arg	Cys	Asp	Thr	Arg	Gln	Gln	Tyr	Arg	Lys	Leu	Leu	Lys		
		395					400					405					
tcc	acg	ctg	gtg	ctc	atg	ccc	ctc	ttt	ggc	gtc	cac	tac	att	gtc	ttc	1300	
Ser	Thr	Leu	Val	Leu	Met	Pro	Leu	Phe	Gly	Val	His	Tyr	Ile	Val	Phe		
	410						415					420					
atg	gcc	aca	cca	tac	acc	gag	gtc	tca	ggg	acg	ctc	tgg	caa	gtc	cag	1348	
Met	Ala	Thr	Pro	Tyr	Thr	Glu	Val	Ser	Gly	Thr	Leu	Trp	Gln	Val	Gln		
425					430					435					440		
atg	cac	tat	gag	atg	ctc	ttc	aac	tcc	ttc	cag	gga	ttt	ttt	gtc	gca	1396	
Met	His	Tyr	Glu	Met	Leu	Phe	Asn	Ser	Phe	Gln	Gly	Phe	Phe	Val	Ala		
				445					450					455			
atc	ata	tac	tgt	ttc	tgc	aat	ggc	gag	gta	caa	gct	gag	atc	aag	aaa	1444	
Ile	Ile	Tyr	Cys	Phe	Cys	Asn	Gly	Glu	Val	Gln	Ala	Glu	Ile	Lys	Lys		
			460					465					470				
tct	tgg	agc	cgc	tgg	aca	ctg	gca	ctg	gac	ttc	aag	cga	aag	gca	cgc	1492	
Ser	Trp	Ser	Arg	Trp	Thr	Leu	Ala	Leu	Asp	Phe	Lys	Arg	Lys	Ala	Arg		
		475					480						485				
agc	ggg	agc	agc	agc	tat	agc	tac	ggc	ccc	atg	gtg	tcc	cac	aca	agt	1540	
Ser	Gly	Ser	Ser	Ser	Tyr	Ser	Tyr	Gly	Pro	Met	Val	Ser	His	Thr	Ser		
	490					495					500						
gtg	acc	aat	gtc	ggc	ccc	cgt	gtg	gga	ctc	ggc	ctg	ccc	ctc	agc	ccc	1588	
Val	Thr	Asn	Val	Gly	Pro	Arg	Val	Gly	Leu	Gly	Leu	Pro	Leu	Ser	Pro		
505					510					515					520		
cgc	cta	ctg	ccc	act	gcc	acc	acc	aac	ggc	cac	cct	cag	ctg	cct	ggc	1636	
Arg	Leu	Leu	Pro	Thr	Ala	Thr	Thr	Asn	Gly	His	Pro	Gln	Leu	Pro	Gly		
				525					530					535			
cat	gcc	aag	cca	ggg	acc	cca	gcc	ctg	gag	acc	ctc	gag	acc	aca	cca	1684	

His	Ala	Lys	Pro	Gly	Thr	Pro	Ala	Leu	Glu	Thr	Leu	Glu	Thr	Thr	Pro		
			540					545					550				
cct	gcc	atg	gct	gct	ccc	aag	gac	gat	ggg	ttc	ctc	aac	ggc	tcc	tgc	1732	
Pro	Ala	Met	Ala	Ala	Pro	Lys	Asp	Asp	Gly	Phe	Leu	Asn	Gly	Ser	Cys		
		555					560					565					
tca	ggc	ctg	gac	gag	gag	gcc	tct	ggg	cct	gag	cgg	cca	cct	gcc	ctg	1780	
Ser	Gly	Leu	Asp	Glu	Glu	Ala	Ser	Gly	Pro	Glu	Arg	Pro	Pro	Ala	Leu		
		570				575					580						
cta	cag	gaa	gag	tgg	gag	aca	gtc	atg	tga							1810	
Leu	Gln	Glu	Glu	Trp	Glu	Thr	Val	Met									
585					590												